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Veröffentlichungsversion / Published Version
Sammelwerksbeitrag / collection article

Empfohlene Zitierung / Suggested Citation:

Leviatan, U. (2006). Inequalities in health among Kibbutz elderly - effects of structural changes. In K.-S. Rehberg (Ed.), *Soziale Ungleichheit, kulturelle Unterschiede: Verhandlungen des 32. Kongresses der Deutschen Gesellschaft für Soziologie in München. Teilbd. 1 und 2* (pp. 1946-1962). Frankfurt am Main: Campus Verl. <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-144109>

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Inequalities in Health among Kibbutz Elderly – Effects of Structural Changes¹

Uriel Leviatan

Kibbutz background for the study

In the past the aging population of the kibbutzim demonstrated a high level of health, exceptional levels of wellbeing, longevity, and solid testimony to successful aging. These were evinced in many indicators. For instance, death rates of members aged over 50 years were much lower than those for the Jewish population in Israel, to the ratio of 1:2 or 2:3. Life expectancy of the kibbutz population was thus three to four years longer than that of the Jewish population in Israel. It was also longer than in other populations in industrial societies (Leviatan et al. 1983; Leviatan 1999; Leviatan and Cohen 1985). Illustrative data are shown in Table 1.

Gender	Year	LE at birth		LE at age 50	
		Kibbutz	Israeli Jews	Kibbutz	Israeli Jews
Males	1977	74.4	71.9	28.3	25.7
	1984	76.7	73.5	29.6	26.5
	1995	78.1	75.9	30.8	28.3
Females	1977	79.0	75.4	31.0	28.0
	1984	81.3	77.1	33.4	29.2
	1995	82.5	79.8	33.8	31.2

Table 1: Life expectancy (LE) at birth and at age 50 of kibbutz permanent population and Israeli Jews in three years: 1977, 1984 and 1995 (by gender).

(Sources: Leviatan, 2003; data for the Jewish population in Israel are taken from Statistical Abstracts of Israel, Central Bureau of Statistics, 1979; 1986; 1997)

Moreover, past research has shown that the aging population of the kibbutzim enjoyed very positive levels of physical health and wellbeing in comparison with

¹ This paper is based in part on a Master Thesis by Chagit Salem and written under the guidance of the author.

other populations, expressed in indices such as satisfaction with specific life domains, with kibbutz life, and with life in general (Leviatan et al. 1981; Carmel et al. 1995; 1996; Leviatan 1999; Tannebaum et al. 1974).

Research of aging in kibbutzim focused on the following question: »What are the main determinants of the positive indices of health, wellbeing, and life expectancy for the kibbutz population in general, and for its elderly in particular?« Major findings of such research pointed to the *social arrangements* that kibbutzim offer to their members as the pivotal factor explaining the positive outcomes summarized above. Underlying these arrangements were the following principles or values: (a) reference to each individual according to his/her unique needs and capabilities (as demanded by the guiding kibbutz principle of *qualitative equality*: »To each according to his/her needs, from each according to his/her capabilities«; (b) total and unconditional responsibility of kibbutz communities for satisfying the needs and care of the development of each individual member and those dependent upon them; (c) expression of full solidarity among members; (d) striving for *qualitative equality* among them in all domains of life.

Social arrangements based on these principles were adjusted to create »social capital« (Leviatan et al. 1981; Leviatan/Cohen-Mansfield 1994; Cohen-Mansfield/Leviatan 1994; Leviatan 1999) as a resource conducive to the enhancement of health and wellbeing of kibbutz elderly.

The physical aspect of »social capital« (Lynch/Kaplan 1997) was expressed, for instance, in the kibbutz commitment to create appropriate jobs for the elderly at every age and as long as they were willing to continue working. Resources were invested in the creation of appropriate possibilities for leisure activities; the material standard of living of the aged was kept equal to that of younger members in their full capacity as workers. Kibbutz health institutions saw themselves as responsible for the elders' health, so they institutionalized preventive medicine, ambulatory institutions, and medical follow-ups – all under their own responsibility.

Parallel to investments in the creation of the physical form of social capital came the building of social capital in the social spheres (Kawachi 1999). For the elderly members this was expressed in an emphasis on social integration, and social support.

The thesis arguing for the importance of social arrangements found support in research. For instance, older members of kibbutzim that differed in levels of social arrangements assumed to contribute to health and wellbeing indeed displayed expected differences on these outcomes (Leviatan et al. 1981; Leviatan 1999). The findings were similar when kibbutzim were compared with other populations in Israel and abroad (e.g. Leviatan 1988) and again when personal characteristics and social arrangements were contrasted as predictors of well being and health (Leviatan et al. 1981).

Yet, the importance of socioeconomic equality among members of different communities could not be tested as kibbutzim showed hardly any variability in this regard.

This deficiency of past studies can now be remedied by the research opportunities offered in light of the structural transformations currently experienced by many kibbutzim.

Current structural changes in kibbutzim

During the last fifteen years the kibbutzim have experienced what is labeled the »kibbutz crisis« (e.g. Rozolio 1999; Rosner/Getz 1996; Leviatan et al. 1998). Since the end of the 1980s, and still more intensively from the 1990s to the time of writing (2004), many kibbutzim have experienced major structural and ideological changes (see annual surveys by Getz 1990–2004).

The most significant structural changes are firstly expressed in »privatization of public budgets«, and secondly in »differential salary« (in which remunerations are based on level of professional or managerial position at work.)

»Privatization of public budgets« means that a public budget, for example, for food, which previously was distributed according to individual needs (within the capabilities of the kibbutz), has been »privatized«. Now each member receives a food budget, which is equal to what other members get, without reference to any unique needs or wishes of the individual concerned.

The principle of privatization of public budgets eliminates the view of each individual as unique and abolishes the principle of »qualitative equality«. With this, the responsibility of kibbutz institutions to treat each individual member »according to his or her needs« is lifted also. Unconditional solidarity among members is lost too. The distributive principle preserved in privatization is »mechanical equality«.

The second major topic of structural changes adopted by many kibbutzim (presently about half of all kibbutzim) is expressed in the »differential« salaries members now get from their kibbutz. The equity principle of remuneration runs counter to the principles previously exercised by the same kibbutzim, when the personal or family consumption budget was calculated to assure a similar standard of living for all members (»mechanical equality«), but on the other hand took into account the family's or the individual's unique needs (»qualitative equality«).

Table 2 shows the percentages of kibbutzim that have adopted privatization in various domains and also differential salaries for remuneration.

Year	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03
* Privatization of food budget	3	N A	6	7	16	25	38	48	60	64	69	72	8 0	8 5
*Privatization of enrichment studies for children	4	5	9	10	12	14	13	19	26	28	32	41	4 5	5 0
* Privatization of higher studies (part or whole)	1	3	3	4	7	7	10	8	11	15	21	28	4 8	5 3
* Privatization of health budget (part or whole)	N A	N A	N A	N A	N A	N A	N A	6	9	9	21	32	4 9	5 7
* Differential salary (part or whole)	N A	N A	N A	N A	1	2	6	10	16	12	31	43	5 0	5 7

Table 2: Percentage of kibbutzim reporting adoption of structural privatization or differential salary transformations (1990–2003).

(Source: Getz (1998–2004) Annual surveys)

Socioeconomic inequality and its effect on health

The structural changes in kibbutzim described above – privatization of public budgets and differential salaries – are expected to be of major importance in influencing the physical and mental health of members. This is because they bring about *inequality in socioeconomic positions* within the same communities.

A rich literature shows that individuals lower on socioeconomic status dimensions suffer more from ill health symptoms or risk factors for health (e.g. Adler et al. 1994; Adler/Ostrove 1999; Marmot 1999; Robert/House 2000; Anderson/Armstead 1995; Taylor et al. 1997; Robert 1998; Taylor et al. 1997).

Other research, at the aggregate level of analysis, posits a negative relationship of degree of socioeconomic inequality with average levels of health and life expectancy of members in these social aggregates (Wilkinson 1999; Lynch/Kaplan 1997; Kawachi et al. 1999). This is because communities with more expressed socioeconomic inequalities invest less in physical expressions of social capital, and their psychosocial kind of social capital is also at a lower level.

These findings from studies outside the kibbutz are relevant to the kibbutz situation and their structural transformations.

1. The privatization of public budgets and the introduction of differential salaries increases differentiation in social status through creating a sizeable layer of »poor« (rank-and-file level) members on the one hand, and »rich« (high ranking managerial office holders) members on the other (Rosner et al. 2002; Pavin 2003).
2. At the community level of analysis, privatization of public budgets and differential salaries creates socioeconomic inequalities within a kibbutz. Socioeconomic inequality in communities should cause a lowering of their members' health levels due to the smaller investment made by these communities in physical determinants of health (Lynch/Kaplan 1997), as well as less positive expressions of psycho-social capital (Kawachi 1999; Marmot 1999) such as mutual trust, norms of reciprocity, or social support.

Figure 1 and Figure 2 summarize the discussion thus far by displaying two causal flow models (at the societal (aggregated) level of analysis – Figure 1; and at the individual level of analysis – Figure 2).

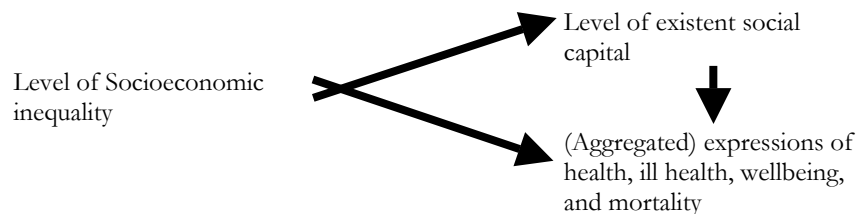


Figure 1: Causal flow model, at the social aggregate level of analysis, relating level of socioeconomic inequality, existence of social capital (physical and social), and aggregated expressions of health, ill health, wellbeing, and mortality.

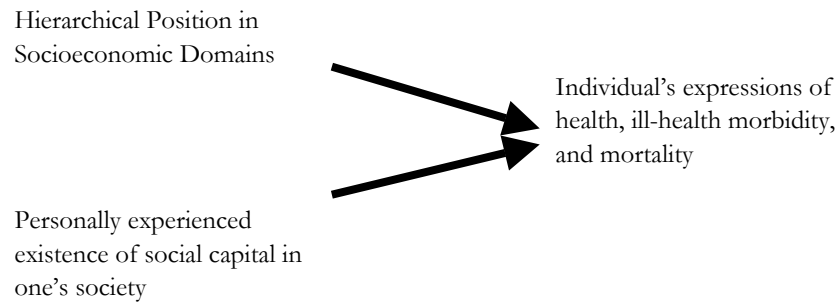


Figure 2: Causal flow model, at the individual level of analysis, relating individual hierarchical position in socioeconomic domains, personally experienced existence of social capital in one's society, and individual's expressions of health, ill health, morbidity, and mortality.

Hypotheses: Given the relationships suggested in Figures 1 and 2, we now state more formal hypotheses to be investigated in this study.

a. Hypotheses at the aggregate level of analyses:

Ha1: Kibbutzim that practice arrangements of differential remuneration and extensive privatization will show lower levels of the existence of social capital.

Ha2: Members of kibbutzim that practice differential remuneration and extensive privatization will express, on average, lower levels of health and wellbeing, and higher levels of ill health.

b. Hypotheses at the individual level of analysis:

Hb1: An individual's hierarchical position on socioeconomic dimensions will determine that individual's level of health.

Hb2: An individual's experience of existent social capital in the community will determine that individual's level of health.

Methods

Study design

This is a cross sectional study; data were collected in 2002 from samples of older members (55+ years) in four kibbutzim that formed two matched pairs; kibbutzim in each pair were roughly equal in their level of economic situation, and their mem-

bership ranged at around 300–400. In each pair one kibbutz had instituted differential salaries as its remuneration system (the D kibbutz) and one still operated the traditional (qualitative equality) system of remuneration (the T kibbutz). The founders of all four kibbutzim were of (Jewish) eastern European origin, and all four belonged to the former Kibbutz Artzi federation.

Instruments

The major instruments were the following: (a) a questionnaire elicited perceptions and evaluations of various domains in kibbutz life, self-evaluation of health and wellbeing, and personal demographic-biographic details. (b) the medical files of the same individuals were analyzed by a health professional of the kibbutz (nurse or the local family physician); these professionals also gave a general evaluation of each respondent's level of health. (c) Key central office holders were interviewed by phone as informants on the level of privatization and on details of the structure of differential remuneration in their kibbutz.

Due to the relatively small number of actual respondents in each of the four kibbutzim (only about 35) we combined data for each of the two types (D or T) of kibbutzim and compared the members of the two types with each other.

The questionnaire items were mostly set on Likert-type scales, each with a range of five possible responses, generally from *most positive* (1) to *least positive* or *most negative* (5).

Variables

Factor analyses of the data produced, where appropriate, indices. (Detailed characteristics of these indices and other descriptive material will be sent by request.)

Plan for testing hypotheses

At the aggregated level of analyses

Because we had only two groups of individuals, we could not test for the intervening position of social capital between levels of socioeconomic inequality (operationally defined as a kibbutz being Differential or Traditional). We therefore tested for a direct relationship of type of kibbutz (D or T) with social capital indices on the one hand and with indicators of health and wellbeing on the other.

At the individual level of analysis

We tested relationships of (a) experienced levels of existing social capital with indicators of health and wellbeing; and (b) individual standing on social status dimensions with indicators of health and wellbeing.

Results

Respondents of each of the four kibbutzim in the study supplied information about the extent of privatization and the existence of differential salaries in the kibbutz. The two traditional kibbutzim still adhered to the principle of equality so that personal budgets were allocated to individuals and families equally or according to needs (as determined by size of family or special needs); the two kibbutzim with the differential salary arrangements had an allocation structure where remuneration was differential with a range of 1:2.3 for one kibbutz and 1:3.4 for the other kibbutz.

The two differential kibbutzim had privatized the following public budgets for consumer items: food, higher education, personal enrichment courses, laundry, health, and children's education. Only the food budget had been privatized in the two traditional kibbutzim. Both the differential kibbutzim had become that type only within two years prior to data collection, but discussion among members and the psychological stress and conflicts that accompanied the fierce debates were present at least one or two years before that.

Members from the D kibbutzim were on average older than those from the T kibbutzim. To overcome this problem we performed two analyses of comparisons: once with a group aged 70 years or younger (Table 3) and then with a group aged 71 years or older (Table 4).

Variables and indices	Kibbutz type: 1=D; 2=T	N	Mean	SD	Student's t statistics
Indicators of social capital					
Satis. with equality on kibbutz	1	29	3.93	1.10	2.29
	2	46	3.43	.78	
Trust in leadership	1	35	3.93	.94	2.18
	2	45	3.48	.90	
*Social capital	1	35	3.45	.68	5.26***
	2	48	2.72	.59	
*Members' visits to one's home	1	33	3.40	1.21	NS
	2	43	3.65	.87	
*Meetings (informally) w. members	1	35	3.33	.91	NS
	2	46	3.03	.72	
*Attending kibbutz functions (1=all; 2= none)	1	34	1.40	.41	4.79***
	2	45	1.05	.12	
Indicators of health and well being					
*Physical health	1	35	2.40	1.11	NS
	2	48	2.04	.98	
*Alienation (reversed)	1	34	2.98	.95	NS
	2	46	2.96	.93	
Satisfaction with kibb. life	1	35	2.83	1.01	2.22*
	2	48	2.40	.644	
*Age	1	35	62.6	5.38	NS
	2	48	61.3	4.16	

Table 3: Comparison of members of the two kibbutz types (D and T^a): their perceptions and attitudes on dimensions of social capital and health and wellbeing. Age group 55–70. Mean age about 62.

^a D = kibbutz with differential remuneration; T = traditional kibbutz.

* $p < .05$; ** $p < .01$; *** $p < .001$

At age 70 or lower, the two sub-samples differed in expected ways. Differences appeared in how they experienced the existence of social capital on their kibbutz, satisfaction with the level of equality among members, level of trust in local leadership, attendance at local social functions, and level of satisfaction with kibbutz life. In all comparisons the members from traditional kibbutzim exhibited more positive

results. Yet, no statistically significant differences appeared in the index of satisfaction with material standard of living, level of education attained, or percentage of those holding office currently or in the past five years (though the trend in the data was in the expected direction). The age in the two groups was equated: 62.6 vs. 61.3. No statically significant difference emerged in the global measure of physical health, although it was in the expected direction.

Table 4 shows the same analysis as Table 3, but with the group aged 71 years or older.

Variables and indices	Kibbutz type: 1=D; 2=T	N	Mean	SD	Student's t statistic
Indicators of social capital					
*Satis. with equality on kibbutz	1	33	3.88	.74	4.68***
	2	17	2.76	.90	
*Trust in leadership	1	33	3.51	1.01	3.68***
	2	17	2.47	.82	
*Social capital	1	33	3.18	.56	6.54***
	2	19	2.21	.43	
*Members' visits in one's home	1	32	3.66	.89	NS
	2	17	3.48	.81	
Meetings (informally) with members	1	32	3.04	.81	2.14
	2	18	2.46	.99	
*Attending kibbutz functions (1=all; 2=none)	1	30	1.28	.36	3.29**
	2	18	1.05	.14	
Indicators of health and well being					
*Physical health	1	34	4.30	1.11	3.64***
	2	19	2.82	.97	
*Alienation (reversed)	1	32	3.42	.81	NS
	2	19	3.28	.69	
*Satisfaction with kibb. life	1	32	2.47	.88	NS
	2	19	2.21	.79	
*Age	1	34	79.9	4.93	NS
	2	19	80.32	6.84	

Table 4: Comparison of members of the two kibbutz types (D and T^a): their perceptions and attitudes on dimensions of social capital, health and wellbeing. Age group 71 or older. Mean age about 80.

^a D = kibbutz with differential remuneration; T = traditional kibbutz.

* $p < .05$; ** $p < .01$; *** $p < .001$

At the age of 71 or older, the two sub-samples differed in a similar way as the younger age group, but the differences were more pronounced and the levels of Student's *t* statistics were higher. The effect of kibbutz type on the global health measure of physical health was particularly pronounced.

We conclude that arrangements of differential remuneration were related to lower levels of social capital on the one hand, and lower levels of health and wellbeing on the other.

Analysis at the individual level

Hypotheses 2a and 2b concerned how the personal experience of existence (or non-existence) of social capital in its various forms affected health and wellbeing, and how health and wellbeing were affected by positions a person held on several dimensions of socioeconomic status. These hypotheses were tested at the individual level of analysis first by calculating the zero order coefficients of correlations of variables denoting social capital and personal positions with physical health, alienation, and satisfaction with kibbutz life. However, since it was already demonstrated that the age variable exerted strong effect on the outcome variables of health and wellbeing, partial correlation coefficients (holding age as constant) were calculated in parallel. Table 5 presents the two parallel analyses.

	Physical health		Alienation		Satis. w. life on kibb.	
	r	Partial r ^a	r	Partial r	R	Partial r
Indicators of social capital						
*Satisfaction with equality	.280(***)	.438***	-.273(**)	-.291***	.302(***)	.295***
*Social capital	NS	.263***	-.222(**)	-.255**	.485(***)	.474**
*Trust in leadership	NS	.239**	-.185*	-.276**	.456	.438***
*Members' visits to one's home	NS	NS	NS	NS	NS	NS
*Meetings (informally) w. members	NS	NS	NS	NS	.266**	.248**
Attending public functions	NS	.192	NS	NS	.198*	.193*

Indicators of standings on socioeconomic status dimensions						
Level of attained education	-.204	NS	-.310***	-.274**	NS	NS
Current office holding	.203	NS	-.254**	-.216*	NS	NS
*Managerial office in previous 5 yrs.	NS	NS	-.299***	-.275**	NS	NS
*Satis. with material standard of living	NS	NS	NS	NS	.433(***)	.419***
*Age	.496***	--	-.171*	--	NS	--

Table 5: Relating personally experienced or perceived levels of social capital indicators and social status positions with levels of physical health, alienation, and satisfaction with kibbutz life. Coefficients of correlations at the zero order level, and partial correlations when »age« is held constant.

^a Age held constant

* $p < .05$; ** $p < .01$; *** $p < .001$

It is clear from Table 5 that indicators of the level of social capital experienced by members were a major determinant of health and wellbeing.

Most of these relationships remained substantial when age was held constant in an analysis of partial correlations. The exception was the variable of members' visits to one's home.

Next we present multiple regression analyses where the three outcome variables (physical health, alienation, and satisfaction with kibbutz life) were the dependent variables and variables denoting social capital, social status standings and age were the »predictors«. Table 6 summarizes these analyses.

A: Physical health is the dependent variable					
Predictors	beta	Zero order r	Beta * r	Explained variance ¹	r partial
*Age	.570	.505	.288	74.8%	.577
*Satisfaction with equality	.254	.274	.070	18.2%	.296
*Trust in leadership	.200	.140	.028	7.3%	.231
R=.621; R ² =.385; R ² _{adj} =.370; N=119; F=24.25; p<.000					
B: Alienation is the dependent variable					
*Satisfaction with equality	-.274	-.299	.082	39.8%	.292
*Level of attained education	.195	.284	.055	26.7%	.198
*Managerial office in previous	-.218	-.316	.069	33.5%	.221

5 yrs.					
R=.454; R ² =.206; R ² _{adj.} =.184; N=110; F=9.26; p<.000					
C: Satisfaction with kibbutz life is the dependent variable					
*Social capital	.283	.482	.136	37.7%	.280
*Satis. with standard of living	.288	.420	.127	35.2%	.326
Trust in leadership	.227	.456	.104	28.8%	.228
R=.601; R ² =.361; R ² _{adj.} =.346; N=131; F=24.08; p<.000					

Table 6: Regression analyses to explain variance in health and wellbeing as the outcome variables. Predictors are the social capital variables, age, and socioeconomic positions.

⁽¹⁾ Since in standard scores $R^2 = \frac{\beta_1 r_1 + \beta_2 r_2 + \dots + \beta_n r_n}{R^2} \times 100$ gives an estimate in percent of the contribution of predictor n to the explained variance in the dependent variables. This is true as long as the major β_n s and r_n s carry the same sign. When this condition does not hold, and the β and r that are involved are large, the formula is difficult to interpret.

The list of »predictors« originally included in the analyses encompassed all indicators of social capital in their various manifestations, measures of socioeconomic standings of individuals (education, office holding, and satisfaction with standard of living), membership in a kibbutz type (D or T), and age. The resultant multiple regression functions included in each analysis only three.

As stated, membership in a kibbutz type (D or T) did not enter any of the formulas; this indicated that the explained variance (of the outcome indicators) carried by this variable was wholly mediated by the social capital variables. We tested whether such membership played the part of a conditioning variable by running the same regression analyses separate for the respondents of the D and the T kibbutzim. The resultant formulas came out practically very similar to the original formulas computed with all respondents.

Table 6 shows that while age was a major determinant of physical health (as could be expected), it still left a substantial role for indicators of social capital (trust in leadership and satisfaction with equality on one's kibbutz), which accounted for about ten percent of the variance in physical health or about 25 percent of the explained variance. About 37 percent of the variance are explained by these predictors.

Summary and conclusions

Differential kibbutzim clearly showed lower expressions of social capital in all their manifestations: less satisfaction with equality, less trust in leadership, and less existence of social capital as expressed in intensity and frequency of interaction with members. It is also clear that members of traditional kibbutzim displayed more positive indicators of health and wellbeing.

Strong relationships, supporting the hypothesis tested, also appeared at the individual level of analysis: members who experienced higher levels of social capital were also healthier and expressed more positive states of wellbeing.

Social capital expressed in more private conditions (e.g., leisure activities, visits to one's home) was not as differentiated between the two types of kibbutzim. We suggest that this reflects a stronger personal component that takes longer to overcome by situational and social transformations.

Although age was a strong correlate of health and wellbeing, the above relationships held even when age was kept constant in a partial correlation and in a multiple regression analysis at the individual level of analysis. This was also the case when the same age groups were compared at the aggregate level of analysis.

All these findings render strong support for previous research that viewed social arrangements and the existence of social capital as the major causes of successful aging and longevity of kibbutz members. Accordingly, major changes in social arrangements (e.g., privatization and differential salaries) should adversely affect successful aging, morbidity and mortality, and the wellbeing of kibbutz members. It is perhaps too early for an unconditional conclusion in this direction; more time should be allowed to pass after the adoption of these structural transformations before an unequivocal conclusion can be reached.

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